STATIONARY SOURCE PERMIT TO CONSTRUCT AND OPERATE
This permit includes designated equipment subject to New Source Performance Standards (NSPS).
This permit includes designated equipment subject to National Emission Standards for Hazardous Air Pollutants Municipal Solid Waste Landfills.

In compliance with the Federal Clean Air Act and the Commonwealth of Virginia Regulations for the Control and Abatement of Air Pollution,

Cumberland County Development Company, LLC
2490 Charles City Road
Richmond, Virginia 23231
Registration No.: 32076

is authorized to construct and operate

a municipal solid waste landfill and gas collection and control system

located

1.5 miles south of Rt. 60, 6 miles east of the Cumberland County Courthouse

in accordance with the Conditions of this permit.

Approved on DRAFT.

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Steven A. Dietrich, P.E.
Regional Director, Department of Environmental Quality

Permit consists of 11 pages.
Permit Conditions 1 to 33.

INTRODUCTION

This permit approval is based on the permit application dated March 20, 2008, including supplemental information dated June 20, 2008, July 25, 2008, and July 31, 2008. Any changes in the permit application specifications or any existing facilities which alter the impact of the facility on air quality may require a permit. Failure to obtain such a permit prior to construction may result in enforcement action. In addition, this facility may be subject to additional applicable requirements not listed in this permit.

Words or terms used in this permit shall have meanings as provided in 9 VAC 5-10-20 of the State Air Pollution Control Board Regulations for the Control and Abatement of Air Pollution. The regulatory reference or authority for each condition is listed in parentheses () after each condition.

Annual requirements to fulfill legal obligations to maintain current stationary source emissions data will necessitate a prompt response by the permittee to requests by the DEQ or the Board for information to include, as appropriate: process and production data; changes in control equipment; and operating schedules. Such requests for information from the DEQ will be either in writing or by personal contact.

The availability of information submitted to the DEQ or the Board will be governed by applicable provisions of the Freedom of Information Act, §§ 2.2-3700 through 2.2-3714 of the Code of Virginia, § 10.1-1314 (addressing information provided to the Board) of the Code of Virginia, and 9 VAC 5-170-60 of the State Air Pollution Control Board Regulations. Information provided to federal officials is subject to appropriate federal law and regulations governing confidentiality of such information.

PROCESS REQUIREMENTS

1. **Equipment List** - Equipment to be constructed at this facility consists of:

   - one municipal solid waste (MSW) landfill with a maximum design capacity of 38,868,182 megagrams (Mg) (38,500,000 m^3) of waste

   - a gas collection and control system with the control system consisting of open flaring (Phase 1) and enclosed flaring (Phase 2)

   - four leachate storage tanks totaling 1.6 million gallons capacity

   (9 VAC 5-80-1180)

2. **Design Capacity** - The design capacity of the MSW landfill shall not exceed 38,868,182 Mg (42,755,000 tons) and 38,500,000 m^3 (50,356,000 yd^3). A change in the design capacity may require a permit to construct and operate.
   (9 VAC 5-80-1180)

3. **LFG Collection and Control System** - If the calculated non-methane organic compounds (NMOC) emission rate is greater than or equal to 50 Mg (as calculated in 40 CFR 60.754), the permittee shall comply with either subsection a. or subsections b., c., and d. of the following:

   a. demonstrate that the NMOC emission rate is less than 50 Mg per year through either Tier 2 testing in accordance with 40 CFR 60.757(c)(1) or Tier 3 testing in accordance with 40 CFR 60.757(c)(2); or

   b. submit a landfill gas (LFG) collection and control system design plan meeting the requirements of 40 CFR 60.752(b)(2)(i) to the Blue Ridge Regional Office within one year after the first annual report in which the NMOC emission rate is greater than or equal to 50 Mg per year,

   c. install a gas collection and control system in compliance with 40 CFR 60.752(b)(2)(ii)(A) or (B), and 40 CFR 60.752(b)(2)(iii) within 30 months after the first annual report in which the NMOC emission rate is greater than or equal to 50 Mg per year, and

   d. operate the installed gas collection and control system in compliance with 40 CFR 60.752(b)(2)(iv) and 40 CFR 63 Subpart AAAA.

   (9 VAC 5-80-1180, 9 VAC 5-50-260, 9 VAC 5-50-410, 9 VAC 5-60-100, 40 CFR 63.1955, and 40 CFR 60.752(b)(2))

4. **Modeling** – The permittee shall submit data, including modeling analyses, showing the GCCS is designed to meet all air quality standards. These analyses shall be submitted with the plan required in Condition 3.b.
   (9 VAC 5-80-1180)

5. **Emission Controls** – The gas collection and control system (Phase 1 and Phase 2) installed to comply with Condition 3 shall have the following destruction efficiencies for the collected landfill gas:

VOC	99% or 0.017 lb/MMBtu (as propane)
NMOC	98% or 20 ppmvd as hexane at 3% oxygen

   (9 VAC 5-80-1180, 9 VAC 5-50-260, 40 CFR 60.752(b)(2)(iii)(B))

6. **Emission Controls** – The control device for the gas collection and control system shall be installed in two phases. The first phase shall consist of an open flare (Phase 1). The second phase shall be triggered when the landfill gas collection reaches 4,000 cubic feet per minute for one calendar month. The second phase shall commence operation no later than 90 days

after the end of the triggering calendar month. The second phase shall consist of an enclosed flare (Phase 2).
(9 VAC 5-80-1180 and 9 VAC 5-50-260)

7. **Fugitive Dust Emission Controls** - Unless otherwise specified, dust emission controls shall include the following or equivalent as a minimum:

   a. Dust from grading, cell construction, waste compaction, application of daily cover, storage piles and traffic areas shall be controlled by wet suppression or equivalent (as approved in writing by the DEQ) control measures.

   b. All material being stockpiled shall be kept moist to control dust during storage and handling, or covered to minimize emissions.

   c. Dust from haul roads and traffic areas shall be controlled by the application of asphalt, water, or suitable chemicals or equivalent methods as approved by the DEQ.

   d. Reasonable precautions shall be taken to prevent deposition of dirt on public roads and subsequent dust emissions. These measures shall include paving the entrance road to the facility up to the vicinity of the process areas. Trucks leaving the site shall have clean wheels achieved by use of a wheel washer or equivalent. Dirt, product, or raw material spilled or tracked onto paved surfaces shall be promptly removed.

   (9 VAC 5-80-1180 and 9 VAC 5-50-90)

OPERATING/EMISSION LIMITATIONS

8. **Solid Waste Acceptance** - The landfill shall accept no more than 1,560,000 tons (1,418,182 Mg) of solid waste per year, excluding materials that are accepted but sent off-site and daily cover soils, calculated monthly as the sum of each consecutive 12-month period. Compliance for the consecutive 12-month period shall be demonstrated monthly by adding the total for the most recently completed calendar month to the individual monthly totals for the preceding 11 months.
   (9 VAC 5-80-1180)

9. **Emission Limits -** Emissions from the operation of the open flare (Phase 1) shall not exceed the limits specified below:

PM-10 (filterable and condensable)	0.017 lbs/MMBtu	8.9 tons/yr
Nitrogen Oxides (as NO_2)	0.068 lbs/MMBtu	35.7 tons/yr
Carbon Monoxide	0.37 lbs/MMBtu	194.5 tons/yr

(9 VAC 5-80-1180 and 9 VAC 5-50-260)

10. **Emission Limits -** Emissions from the operation of the enclosed flare (Phase 2) shall not exceed the limits specified below:

PM-10 (filterable and condensable)	0.017 lbs/MMBtu	25.7 tons/yr
Nitrogen Oxides (as NO_2)	0.06 lbs/MMBtu	90.7 tons/yr
Carbon Monoxide	0.15 lbs/MMBtu	226.6 tons/yr

(9 VAC 5-80-1180 and 9 VAC 5-50-260)

11. **Visible Emission Limit** - Each control device (Phase 1 and Phase 2) shall be operated with no visible emissions, as determined by EPA Method 22 (reference 40 CFR 60, Appendix A), except for periods not to exceed a total of five minutes during two consecutive hours. This condition applies at all times except during startup, shutdown and malfunction.
(9 VAC 5-80-1180, 9 VAC 5-50-410, 40 CFR 60.18, and 9 VAC 5-50-260)

12. **Requirements by Reference -** Except where this permit is more restrictive than the applicable requirement, the MSW landfill shall be constructed and operated in compliance with the applicable requirements of 40 CFR 60, Subpart WWW.
(9 VAC 5-80-1180, 9 VAC 5-50-410, and 40 CFR 60 Subpart WWW)

13. **Requirements by Reference -** Except where this permit is more restrictive than the applicable requirement, the MSW landfill shall be constructed and operated in compliance with the applicable requirements of 40 CFR 63, Subpart AAAA.
(9 VAC 5-80-1180, 9 VAC 5-60-100, and 40 CFR 63 Subpart AAAA)

14. **Requirements by Reference -** Except where this permit is more restrictive than the applicable requirement, the leachate storage tanks shall be constructed and operated in compliance with the applicable requirements of 40 CFR 60, Subpart Kb.
(9 VAC 5-80-1180, 9 VAC 5-50-410, and 40 CFR 60 Subpart Kb)

15. **Performance Test -** Initial performance tests shall be conducted as required in 40 CFR 60.752(b)(2)(iii) to determine compliance with the applicable requirements of 40 CFR 60 Subpart WWW. Tests shall be conducted and reported and data reduced as set forth in 9 VAC 5-50-30, and the test methods and procedures contained in each applicable section or subpart listed in 9 VAC 5-50-410. The details of the tests are to be arranged with the Blue Ridge Regional Office. The permittee shall submit a test protocol at least 30 days prior to testing. The test report shall be submitted as required in Condition 19 and shall conform to the test report format enclosed with this permit.

(9 VAC 5-80-1180, 9 VAC 5-50-30, 9 VAC 5-80-1200, 9 VAC 5-50-410, and 40 CFR 60 Subpart WWW)

RECORDS AND REPORTING

16. **On-Site Records** - The permittee shall maintain records of emission data and operating parameters as necessary to demonstrate compliance with this permit. The content and format of such records shall be arranged with the Blue Ridge Regional Office. These records shall include, but are not limited to:

    a. Current maximum design capacity report, current amount of waste in place calculated each month, monthly waste acceptance rates, the amounts and types of waste excluded from monthly waste accepted rates, the amounts and types of waste sent off-site that were excluded from monthly waste accepted rates.

    b. Records sufficient to calculate the facility's emissions on a 12-month rolling basis.

    c. Description, location, amount, and placement date of all non-degradable refuse including asbestos and demolition refuse placed in landfill areas which are excluded from landfill gas estimation or landfill gas collection and control.

    d. All records in 40 CFR 60.758(b), (c), (d), and (e) that apply to the facility.

    e. Records showing the dimensions and storage capacity of each leachate tank. These records shall be kept for the life of the source.

    f. All reports required by this permit, 40 CFR 60 Subpart WWW, or 40 CFR 63 Subpart AAAA.

    These records shall be available for inspection by the DEQ and shall be current for the most recent five years.
    (9 VAC 5-80-1180, 9 VAC 5-50-50, 9 VAC 5-50-410, 40 CFR 60.116b(b), and 40 CFR 60.758)

17. **Design Capacity Report** – The permittee shall submit an Initial Design Capacity Report meeting the requirements of 40 CFR 60.757(a) no later than ninety (90) days after commencing construction on the MSW landfill. One copy of the Initial Design Capacity Report shall be submitted to the U.S. Environmental Protection Agency at the address specified in Condition 23.
    (9 VAC 5-80-1180, 9 VAC 5-50-410, and 40 CFR 60.757(a))

18. **NMOC Emission Report** - The permittee shall annually submit a NMOC emission rate report to the Blue Ridge Regional Office meeting the requirements of 40 CFR 60.757(b). One copy of the NMOC emission report shall be submitted to the U.S. Environmental

Protection Agency at the address specified in Condition 23. This initial report shall be submitted no later than ninety (90) days after commencing construction on the MSW landfill. (9 VAC 5-80-1180, 9 VAC 5-50-410, and 40 CFR 60.757(b))

19. **Compliance Report** - Within 180 days of start-up of an active collection system used to comply with Condition 3.c, the permittee shall submit to the Blue Ridge Regional Office the initial semi-annual compliance report of the collection and control system. The report shall contain the following:

    a. The initial performance test report required under 40 CFR 60.8, including the information required in 40 CFR 60.757(g);

    b. Value and length of time for exceedance of applicable parameters monitored under 40 CFR 60.756(a), (b), (c), and (d);

    c. Description and duration of all periods when the gas stream is diverted from the control device through a bypass line or the indication of bypass flow as specified under 40 CFR 60.756.

    d. Description and duration of all periods when the control device was not working for a period exceeding one hour and the length of time control device was not operating;

    e. All periods when the collection system was not operating in excess of five days;

    f. The location of each exceedance of the 500 parts per million surface methane concentration as provided in 40 CFR 60.753(d) and the concentration recorded at each location for which an exceedance was recorded in the previous month;

    g. The date of installation and the location of each well or collection system expansion added pursuant to 40 CFR 60.755(a)(3), 40 CFR 60.755(b), and 40 CFR 60.755(c)(4).

    Items (b) through (f) shall be submitted semi-annually. All future semi-annual reports shall be submitted no later than March 1 and September 1 of each calendar year and shall cover the period of either January 1 to June 30 or July 1 to December 31. One copy of each semi-annual compliance report shall be submitted to the U.S. Environmental Protection Agency at the address specified in Condition 23.
    (9 VAC 5-80-1180, 9 VAC 5-60-100, 9 VAC 5-50-410, 40 CFR 60.757(f), and 40 CFR 63.1980(a))

20. **Startup, Shutdown and Malfunction** - By the date the gas collection and control system is installed to comply with Condition 3.c, the permittee shall:

    a. Have a Startup, Shutdown and Malfunction (SSM) Plan;

b. Operate in accordance with the requirement to minimize SSM emissions per 40 CFR 63.6(e);

c. Maintain records of SSM events required in 40 CFR 63.6(e) and 63.10(b)(2)(i) through (v);

d. Submit SSM reports as required in 40 CFR 63.10(d)(5). The semi-annual SSM reports shall be submitted with the semi-annual reports required in Condition 19.

(9 VAC 5-80-1180, 9 VAC 5-60-100, and 40 CFR 63.1980(a))

21. **Closure Report** – Within 30 days of the date the MSW landfill stopped accepting waste, the permittee shall submit a closure report to the South Central Regional Office and comply with 40 CFR 60.757(d). One copy of the closure report shall be submitted to the U.S. Environmental Protection Agency at the address specified in Condition 23.
(9 VAC 5-80-1180, 9 VAC 5-50-410, and 40 CFR 60.757(d))

22. **Control Equipment Removal Report** – No later than 30 days prior to the cessation of operation or removal of the control equipment per 40 CFR 60.752(b)(2)(v), the permittee shall submit an equipment removal report to the Blue Ridge Regional Office in accordance with 40 CFR 60.757(e). One copy of the equipment removal report shall be submitted to the U.S. Environmental Protection Agency at the address specified in Condition 23.
(9 VAC 5-80-1180, 9 VAC 5-50-410, and 40 CFR 60.757(e))

NOTIFICATIONS

23. **Initial Notifications** - The permittee shall furnish written notification to the Blue Ridge Regional Office of:

a. The actual date on which construction of the MSW landfill commenced within 30 days after such date.

b. The actual start-up date of the landfill within 15 days after such date.

c. The anticipated date of testing under Tiers 2 or 3 to demonstrate NMOC emission rate of the landfill postmarked at least 30 days prior to such date.

d. The anticipated date of performance tests of the gas collection and control system postmarked at least 30 days prior to such date.

Copies of the written notifications referenced in items 23.a through 23.d are to be sent to:
Associate Director
Office of Air Enforcement (3AP10)
U.S. Environmental Protection Agency
Region III

1650 Arch Street
Philadelphia, PA 19103-2029
(9 VAC 5-80-1180 and 9 VAC 5-50-50)

GENERAL CONDITIONS

24. **Permit Invalidation** – This permit to construct the landfill shall become invalid, unless an extension is granted by the DEQ, if:

    a. A program of continuous construction, reconstruction, or modification is not commenced within the latest of the following:

        i. 18 months from the date of this permit;

        ii. Nine months from the date that the last permit or other authorization was issued from any other governmental entity;

        iii. Nine months from the date of the last resolution of any litigation concerning any such permits or authorization; or

    b. A program of construction, reconstruction, or modification is discontinued for a period of 18 months or more, or is not completed within a reasonable time, except for a DEQ approved period between phases of a phased construction project.

    (9 VAC 5-80-1210 and 9 VAC 5-80-1180)

25. **Permit Suspension/Revocation** - This permit may be suspended or revoked if the permittee:

    a. Knowingly makes material misstatements in the permit application or any amendments to it;

    b. Fails to comply with the conditions of this permit;

    c. Fails to comply with any emission standards applicable to a permitted emissions unit;

    d. Causes emissions from the stationary source which result in violations of , or interfere with the attainment and maintenance of, any ambient air quality standard; or

    e. Fails to operate in conformance with any applicable control strategy, including any emission standards or emission limitations, in the State Implementation Plan in effect at the time an application for this permit is submitted.

    (9 VAC 5-80-1210 F and 9 VAC 5-80-1180)

26. **Right of Entry** - The permittee shall allow authorized local, state, and federal representatives, upon the presentation of credentials:

    a. To enter upon the permittee's premises on which the facility is located or in which any records are required to be kept under the terms and conditions of this permit;

    b. To have access to and copy at reasonable times any records required to be kept under the terms and conditions of this permit or the State Air Pollution Control Board Regulations;

    c. To inspect at reasonable times any facility, equipment, or process subject to the terms and conditions of this permit or the State Air Pollution Control Board Regulations; and

    d. To sample or test at reasonable times.

    For purposes of this condition, the time for inspection shall be deemed reasonable during regular business hours or whenever the facility is in operation. Nothing contained herein shall make an inspection time unreasonable during an emergency.
    (9 VAC 5-170-130 and 9 VAC 5-80-1180)

27. **Maintenance/Operating Procedures** – At all times, including periods of start-up, shutdown, and malfunction, the permittee shall, to the extent practicable, maintain and operate the affected source, including associated air pollution control equipment, in a manner consistent with good air pollution control practices for minimizing emissions.
    (9 VAC 5-50-20 E and 9 VAC 5-80-1180 D)

28. **Record of Malfunctions** – The permittee shall maintain records of the occurrence and duration of any bypass, malfunction, shutdown or failure of the facility or its associated air pollution control equipment that results in excess emissions for more than one hour. Records shall include the date, time, duration, description (emission unit, pollutant affected, cause), corrective action, preventive measures taken and name of person generating the record.
    (9VAC 5-20-180 J and 9 VAC 5-80-1180 D)

29. **Notification for Facility or Control Equipment Malfunction** - The permittee shall furnish notification to the Blue Ridge Regional Office of malfunctions of the affected facility or related air pollution control equipment that may cause excess emissions for more than one hour, by facsimile transmission, telephone or telegraph. Such notification shall be made as soon as practicable but no later than four daytime business hours after the malfunction is discovered. The permittee shall provide a written statement giving all pertinent facts, including the estimated duration of the breakdown, within two weeks of discovery of the malfunction. When the condition causing the failure or malfunction has been corrected and the equipment is again in operation, the permittee shall notify the Blue Ridge Regional Office.
    (9 VAC 5-20-180 C and 9 VAC 5-80-1180)

30. **Violation of Ambient Air Quality Standard** - The permittee shall, upon request of the DEQ, reduce the level of operation or shut down a facility, as necessary to avoid violating any primary ambient air quality standard and shall not return to normal operation until such time as the ambient air quality standard will not be violated.
(9 VAC 5-20-180 I and 9 VAC 5-80-1180)

31. **Change of Ownership** - In the case of a transfer of ownership of a stationary source, the new owner shall abide by any current permit issued to the previous owner. The new owner shall notify the Blue Ridge Regional Office of the change of ownership within 30 days of the transfer.
(9 VAC 5-80-1240 and 9 VAC 5-80-1180)

32. **Permit Copy** - The permittee shall keep a copy of this permit on the premises of the facility to which it applies.
(9 VAC 5-80-1180)

STATE-ONLY ENFORCEABLE (SOE) REQUIREMENTS

The following terms and conditions are included in this permit to implement the requirements of 9 VAC 5-50-130 et seq. and are enforceable only by the Virginia Air Pollution Control Board. Neither their inclusion in this permit nor any resulting public comment period make these terms federally enforceable.

33. **Odor Management Plan (SOE)** - The permittee shall develop and maintain an Odor Management Plan (OMP). The OMP shall describe the practices and technology that will be used to minimize off-site odors. The initial plan shall be submitted to the Blue Ridge Regional Office Air Compliance Manager for approval within 60 days of permit issuance. A log of all odor complaints received and actions taken shall be kept and made available for inspection by authorized officials. The OMP shall be evaluated for the need and feasibility of new or modified odor control technology or practices based on actions taken to address odor complaints or when requested by the DEQ. Revisions to the OMP shall be submitted to the Blue Ridge Regional Office for approval within 15 days after such change.
(9 VAC 5-80-1120 F and 9 VAC 5-50-140)

SOURCE TESTING REPORT FORMAT

Report Cover

1. Plant name and location
2. Units tested at source (indicate Ref. No. used by source in permit or registration)
3. Test Dates.
4. Tester; name, address and report date

Certification

1. Signed by team leader/certified observer (include certification date)
2. Signed by responsible company official
3. *Signed by reviewer

Copy of approved test protocol

Summary

1. Reason for testing
2. Test dates
3. Identification of unit tested & the maximum rated capacity
4. *For each emission unit, a table showing:
    a. Operating rate
    b. Test Methods
    c. Pollutants tested
    d. Test results for each run and the run average
    e. Pollutant standard or limit
5. Summarized process and control equipment data for each run and the average, as required by the test protocol
6. A statement that test was conducted in accordance with the test protocol or identification & discussion of deviations, including the likely impact on results
7. Any other important information

Source Operation

1. Description of process and control devices
2. Process and control equipment flow diagram
3. Sampling port location and dimensioned cross section Attached protocol includes: sketch of stack (elevation view) showing sampling port locations, upstream and downstream flow disturbances and their distances from ports; and a sketch of stack (plan view) showing sampling ports, ducts entering the stack and stack diameter or dimensions

Test Results

1. Detailed test results for each run
2. *Sample calculations
3. *Description of collected samples, to include audits when applicable

Appendix

1. *Raw production data
2. *Raw field data
3. *Laboratory reports
4. *Chain of custody records for lab samples
5. *Calibration procedures and results
6. Project participants and titles
7. Observers' names (industry and agency)
8. Related correspondence
9. Standard procedures

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* Not applicable to visible emission evaluations

VIRGINIA DEPARTMENT OF ENVIRONMENTAL QUALITY
Blue Ridge Regional Office

INTRA-AGENCY MEMORANDUM

Permit Writer	Patrick Corbett			
Memo To	Air Permit File	**Date**	DRAFT	
Facility Name	Cumberland County Development Company, LLC			
Registration Number	**32076**			
County-Plant I.D.	049-00007			
UTM Coordinates (Zone 17)	751.61	**Easting (km)**	4155.29	**Northing (km)**
Elevation (feet)	360			
Distance to Nearest Class I Area (select one)	83.2	**SNP (km)**	109	**JRF (km)**
FLM Notification (Y/N)	Y	**Required if less than 10K (minor), 100K (state major)**		
NET Classification (A, SM, B)	A	**Before permit action**	A	**After permit action**
Title V Major Pollutants	CO, NMOC	**Before permit action**	CO, NMOC	**After permit action**
PSD Major Source (Y/N)	N	**Before permit action**	N	**After permit action**
PSD Major Pollutants	None	**Before permit action**	None	**After permit action**

I. Introduction

The Cumberland County Development Company, LLC submitted an application dated March 20, 2008 to construct and operate the Cumberland Landfill (CL), a municipal solid waste (MSW) landfill, about 1.5 miles south of Route 60 and approximately 6 miles east of Cumberland Courthouse. CL submitted additional information dated June 20, 2008, July 25, 2008, and July 31, 2008. The application was deemed complete on August 11, 2008 (receipt of July 31 information).

II. Emission Unit(s) / Process Description(s)

CL's design capacity is 38,868,182 megagrams (Mg) and 38,459,128 m^3 (at 1.008 Mg/m^3) at final size. Fourteen cells will be constructed, allowing the landfill to accept waste for approximately 28 years[1].

The site will also have one emergency generator rated at 350 kW and leachate storage tanks. The number of leachate storage tanks is not decided; however, the total capacity will not exceed 1.6 million gallons and the individual tank capacity will not exceed 500,000 gallons. The gasoline tank is estimated at 4,000 gallons capacity. The diesel

[1] For this review, the maximum annual acceptance rate was utilized for each year of landfill operation. It is noted that the host agreement with Cumberland County restricts acceptance rates below this value for many of the years of operation. The applicability review here has no effect on the other acceptance restrictions that apply. The data used conservatively creates the highest possible emission rate. The life of the landfill stated here is based on this maximum acceptance rate.

storage tank(s) total capacity will not exceed 20,000 gallons.

III. Regulatory Review

A. 9 VAC 5 Chapter 80, Part II, Article 6 – Minor New Source Review

As stated in 9 VAC 5-80-1100 E, a facility subject to a New Source Performance Standard (NSPS), as contained in 9 VAC 5-50-400 *et seq.*, shall not be exempt from the provisions of Article 6. As discussed in Section III.C, CL is subject to 40 CFR 60 Subpart WWW (hereafter referred to as "the NSPS") which is incorporated by reference into 9 VAC 5-50-410; therefore, a permit to construct and operate is required.

CL will have a 350 kW emergency generator. 40 CFR 60 Subpart IIII is not incorporated into Virginia's regulations and therefore does not automatically trigger permitting. It is exempt from permitting under 9 VAC 5-80-1320 B. The diesel and gasoline storage tanks are also listed in 9 VAC 5-80-1320 B. Diesel storage may have one tank with a maximum capacity of 20,000 gallons. This size tank would be subject to the recordkeeping requirements of 40 CFR 60 Subpart Kb (75 m^3 threshold) storing diesel. As these units are listed in 9 VAC 5-80-1320 B and a 20,000 gallon diesel storage tank is only subject to recordkeeping requirements, these units are not included in the permit.

For landfills, the solid waste acceptance rate affects emissions from a landfill. During the life of the landfill, the maximum waste acceptance rate is 1,560,000 tons of waste per year (1,415,182 Mg per year). Calculations for this review were based on this acceptance rate to produce the maximum possible emissions. This value is based on any 12-month period.

In addition to the waste acceptance rate, several variables are used to estimate emission rates from landfills. These variables are the methane generation potential (L_o), methane generation rate constant (k), and the non-methane organic compounds (NMOC) concentration in the gas generated (C_{NMOC}). There are several available values for these variables, with sometimes drastically different values.

Available guidance[2] suggests that for NSR purposes, the utilization of the AP-42 default values for the respective constants provides for a potential to emit (PTE) considered representative of a landfill's operation. However, leachate recirculation may increase the rate and magnitude of emissions at a landfill. Based on information from landfills in Virginia that have leachate recirculation, utilization of a k value of 0.06 yr^{-1} presents a conservative emissions estimate and correlates to collection rates experienced by at least two landfills[3]. The other AP-42 default values (for L_o and C_{NMOC}) have been utilized

[2] EPA has published several guidance letters noting AP-42 is generally the best information available for new construction of landfills. Most prominently, the NSPS notes that Prevention of Significant Deterioration (PSD) applicability should use the AP-42 default values. Virginia's guidance for landfill permitting also notes the use of AP-42 values is appropriate.

[3] Several other landfills utilize a value of 0.04 yr^{-1} that produces reasonable values based on realized collection rates. The value of 0.06 is utilized to ensure a conservative estimate for applicability and permit review.

after reviewing the landfill data.

The NSPS requires control of NMOC emissions after a certain generation rate is reached (50 Mg/yr). Combustion emissions from control are appropriately considered for permitting as a possible "state major source"[4]. The combined emissions (control device and landfill) after BACT are greater than the 100 TPY threshold for NMOC and carbon monoxide (CO); therefore CL is a state major source. See Attachment A for all calculations. See Section IV for the BACT discussion.

As a new state major source, the project must meet the following additional requirements:

- publication by the source of a notice of application
- a 30-day public comment period with a public hearing and comments must be accepted for 15 days following the hearing (45 total public comment days)
- Localities particularly affected must be notified
- Federal Land Manager (FLM) notification for Shenandoah National Park (SNP) due to proximity to that Class I area (<100 km)

These requirements are further discussed in Section X of this document.

As described in Section III.E, CL is subject to 40 CFR 63 Subpart AAAA and Subpart ZZZZ. As such, CL is exempt from the state toxics rule (9 VAC 5-60 Article 5).

B. 9 VAC 5 Chapter 80, Part II, Article 8 and Article 9 – PSD Major New Source Review and Non-Attainment Major New Source Review

Cumberland County is a PSD area for all pollutants as designated in 9 VAC 5-20-205. Landfills are not one of the listed source categories that count fugitive emissions in the applicability analysis. It is generally accepted that a collection efficiency of 75% is reasonable[5]. Fugitive emissions do not count emissions that are not "reasonably collected." As such, 25% of the landfill gas emissions are fugitive and are not counted towards major source (Article 8) status. Landfills are not in a source category subject to the 100 TPY major source threshold. Therefore, the major source threshold for CL is 250 TPY. As shown in Attachment A and described in Section III.A, CL is not a major source as defined in 9 VAC 5-80-1615 C. PSD review does not apply.

C. 9 VAC 5 Chapter 50, Part II, Article 5 – NSPS

40 CFR 60 Subpart WWW, New Source Performance Standard: Municipal Solid Waste Landfills, defines the affected facility[6] as a landfill with a design capacity greater than 2.5 million Mg and 2.5 million m^3. CL meets both of these criteria and is therefore subject to the NSPS. CL is projected to have NMOC emissions greater than 50 Mg per year,

[4] A major source and major modification are each defined in Article 6 and Article 8. Each Article has different applicability criteria. To differentiate between the two permitting programs, the term "state major source" is utilized for Article 6 discussion.

[5] AP-42 Chapter 2-4 and 40 CFR 60 Subpart WWW's reference to the use of AP-42 for PSD determinations are two among several guidance documents outlining this approach.

[6] The NSPS (40 CFR 60.752(a) requires initial reports if either of the two capacities is exceeded. The additional NSPS requirements (40 CFR 60.752(b)) apply when both capacities are exceeded.

subjecting them to the requirement to design, install, maintain, and operate a gas collection and control system once actual emissions exceed 50 Mg (40 CFR 60.752(b)(2)). CL must submit the initial design capacity report and the initial NMOC emissions rate report. The remaining requirements of the NSPS are reflected in the permit. A condition referencing the NSPS has been included to ensure the future requirements (or any change in current requirements) of the NSPS are covered in the preconstruction approval. The Title V permit will contain the applicable requirements in a more specific manner as they become applicable. Based on the application information, the landfill will be constructed to comply with the NSPS.

The leachate storage tanks[7] are subject to the recordkeeping requirement contained in 40 CFR 60.116b(b) (Subpart Kb). As the maximum vapor pressure of leachate is less than the 3.5 kPa (0.5 psi) cutoff contained in 60.110b(b), no other requirements apply.

The emergency generator is subject to 40 CFR 60 Subpart IIII upon start-up. This rule has not yet been incorporated into Virginia's Regulations. As CL is subject to Title V, any applicable requirements must be incorporated into the Title V permit when issued.

D. 9 VAC 5 Chapter 60, Part II, Article 1 – NESHAPS
There are no applicable NESHAPS (40 CFR Part 61) standards.

E. 9 VAC 5 Chapter 60, Part II, Article 2 – MACT
40 CFR 63 Subpart AAAA, National Emissions Standards for Hazardous Air Pollutants: Municipal Solid Waste Landfills (hereafter referred to as "the MACT"), defines the affected source utilizing the same criteria as the NSPS (2.5 million m^3 and 2.5 million Mg) and estimated uncontrolled emissions greater than 50 Mg per year. CL meets these criteria. Additionally, emissions calculated as described in Attachment A and Section III.A, CL is a major source[8] of hazardous air pollutants (HAP-major source). 9 VAC 5-80-1120 H and 9 VAC 5-60-100 (incorporating 40 CFR 63.5) require preconstruction review of a HAP-major source to ensure compliance with the promulgated MACT standards. The MACT requires compliance with the NSPS and contains additional requirements beyond the NSPS once the facility is required to install a gas collection and control system (GCCS) per the NSPS. These additional requirements include developing and maintaining a Startup, Shutdown and Malfunction (SSM) Plan for the GCCS and minimizing emissions during SSM events. Also required is semi-annual reporting instead of the NSPS required annual reporting for GCCS operations. These requirements are included in this NSR permit. Based on the application information, the landfill will be constructed to comply with the MACT. A preconstruction intent of approval letter was sent to the source on August 18, 2008. The issuance of this permit constitutes the final determination, completing the preconstruction requirements of the federal hazardous air

[7] The CL application notes as many as four tanks may be installed. The stated maximum storage capacity of the leachate storage tanks is 1.6 million gallons, regardless of the number of tanks installed.
[8] In addition to Footnote 4, another definition of major source exists in 40 CFR Part 63, pertaining to hazardous air pollutants (HAPs). This type of major source is referred to as a "HAP-major source".

pollutant new source review program.

The emergency engine will be subject to 40 CFR 63 Subpart ZZZZ upon start-up. The engine requirement is to comply with 40 CFR 60 Subpart IIII (40 CFR 63.6590(c)). 40 CFR 63.5 requires preconstruction review for HAP-major-emitting affected sources. The engine is not HAP-major-emitting by itself; therefore, the federal hazardous air pollutant new source review program does not apply to the engine. The Title V permit will contain the applicable requirements from Subpart ZZZZ.

CL is a HAP-major source with storage tanks. 40 CFR 63 Subpart EEEE covers tanks storing "organic liquids". The liquids stored at CL (wastewater, diesel, gasoline) are excluded from the definition of "organic liquid".

F. State Only Enforceable (SOE) Requirements (9 VAC 5-80-1120 F)
CL is required to develop and maintain a DEQ (Air Division)-approved Odor Management Plan. The condition requires CL to submit a plan for DEQ approval and continually evaluate their procedures and technology based on odor complaints or when requested by the DEQ. As CL is a state major source requiring public participation, it must be noted that this SOE requirement will not become federally-enforceable due to the public comment period.

IV. Best Available Control Technology Review (BACT) (9 VAC 5-50-260)

Based on the calculations in Attachment A, CL is subject to BACT for NMOC and VOC. The NSPS requirements are considered to represent several candidates for the BACT level of control for this landfill. NMOC will be controlled by one of the NSPS options. This BACT determination focuses on combustion of the landfill gas; however, the NSPS also allows for collection and processing of landfill gas (LFG) without combustion. Processing LFG will probably be used in the event a LFG-to-energy plant is constructed at the landfill in the future. Since there are no firms plans for the energy plant and it may be a separate stationary source, the current BACT analysis cannot mandate processing and selling of the LFG. As such, the current BACT determination is combustion using flaring as the appropriate control technology. BACT determinations for similar sources using flares have resulted in 98% NMOC destruction and 99% VOC destruction. These destruction efficiencies are accompanied by a short-term emission rate. The short-term limit for NMOC (20 ppmv as hexane) is taken from the NSPS at 40 CFR 60.752(b)(2)(iii)(B). The short-term VOC limit (0.017 lb/MMBtu as propane) was calculated from the emissions of VOC after considering the destruction efficiency. This limit is on an "as propane" basis since the emissions are post-combustion. These secondary limits are necessary as efficiency limitations often cannot be met during periods of low flow (or concentration). These requirements are considered BACT for CL.

Considerations for landfill control technology consist mainly of the availability of LFG[9] to combust. Since a landfill's emissions grow over time, with the amount of waste accepted and the time allowed for decomposition, a phased BACT approach has been proposed by CL. This phased approach allows for open flares (generally considered the least efficient[10]) in the beginning of the gas collection and control system (GCCS) operation. As the landfill matures, the LFG generation becomes more stable and predictable. At this point, enclosed flares are installed, achieving better combustion efficiency. This phased approach is proposed due to the difference in "turn-down" ratio between the two flare types. An open flare has a much higher turn-down ratio, allowing for good combustion over a wide range of operating characteristics (e.g., methane content, LFG flow). An enclosed flare provides better combustion efficiency at the price of turn-down ratio. The phased approach allows for a maximization of operating efficiency during unstable operating conditions ("young landfill") and providing for greater combustion efficiency during the periods of greatest LFG generation ("mature landfill"). Based on the Department's experience, enclosed flares do not have sufficient turn-down to achieve the required combustion efficiency during the initial period of landfill operation. Therefore, BACT is a phased flaring approach.

Combustion emissions from the flare must be considered as part of the analysis. Estimated combustion emissions (Attachment A) show the emissions of CO, NOx, and PM10 are subject to BACT. Based on a review of the RACT/BACT/LAER Clearinghouse (RBLC), BACT for similar sized landfills has been emissions ranging from 0.16 lb CO/MMBtu to 0.37 lb CO/MMBtu and 0.068 lb NOx/MMBtu to 0.06 lb NOx/MMBtu. In reviewing the available control technology, ultra-low emissions ground flares are available. Three installations of these flare types have been found; each resulting from a LAER determination or the need for non-attainment offsets[11]. Based on RBLC and other BACT determinations in Virginia, the cost analysis associated with this type of unit results in costs roughly four times the amount deemed effective for other landfills of this size. Since BACT considers the cost effectiveness of control as compared to other similar sources, a factor of four increase in cost ($/ton pollutant removed[12]) is not considered cost effective. For PM10, no BACT determinations require add-on controls. Emission rates vary widely depending on the size of the flare, with the lowest value representing the AP-42 value for flaring, 17 lb PM10/MMcf methane. This equates to 0.017 lb PM10/MMBtu. Based on AP-42, this value includes both filterable and condensable PM10.

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[9] Methane is the combustible portion of LFG which allows for effective control utilizing a flare. The methane portion of LFG is estimated at 50% of the LFG. When LFG is utilized in this document in reference to combustion, methane is the gas necessary to enable combustion.

[10] Combustion efficiency in this sense concerns creating by-products of combustion. Open flares are generally accepted as meeting the destruction efficiencies for NMOC contained in the NSPS. The emissions of CO and NOx are increased compared to enclosed flares.

[11] Utilization of these flares indicates achievability but not the other components of a BACT review. LAER is a more restrictive process than the BACT process applicable to CL.

[12] "Ton pollutant removed" is the normal units for cost-effectiveness. As this portion of the BACT review is concerned with emissions from the landfills BACT determination (NMOC and VOC), the combustion emissions are more appropriately reviewed as "ton pollutant avoided." This is a meaningless difference for this review. As such, the standard units are used in this review.

Considering the discussion of BACT contained in this section, the following limitations are proposed as BACT for CL:

- Installation of a GCCS on the timeframe outlined in 40 CFR 60 Subpart WWW
- Installation of a GCCS meeting the requirements of 40 CFR 60 Subpart WWW
- Installation of a phased flaring approach for the combustion device portion of the GCCS consisting of:
    - Open flares guaranteed to meet all of the following:
        - 98% NMOC destruction
        - 99% VOC destruction
        - emissions of CO not exceeding 0.37 lb CO/MMBtu
        - emissions of NOx not exceeding 0.068 lb NOx/MMBtu
        - emissions of PM10 not exceeding 0.017 lb PM10/MMBtu
        - requirements of 40 CFR 60.18 for open flares
    - Enclosed flares installed once LFG collection achieves a 4,000 cfm of LFG average over one calendar month[13]. The enclosed flare shall become operational within 90 days after the end of the triggering calendar month. The flare(s) shall meet all of the following:
        - 98% NMOC destruction
        - 99% VOC destruction
        - emissions of CO not exceeding 0.15 lb CO/MMBtu
        - emissions of NOx not exceeding 0.06 lb NOx/MMBtu.
        - emissions of PM10 not exceeding 0.017 lb PM10/MMBtu

Total reduced sulfur (as S) and H_2S are subject to BACT based on Attachment A calculations. Collection and combustion per the NSPS is considered BACT for these pollutants. These pollutants oxidize to sulfur dioxide (SO_2), which weighs twice as much as the TRS (H_2S is a component of TRS so it is not "double-counted"). SO_2 is not emitted directly by the landfill. Emissions of SO_2 after combustion are less than the respective exemption thresholds; BACT does not apply to this combustion by-product.

V. Summary of Actual Emissions Increase

The actual emissions increase is most dependent on the waste acceptance rate which is limited in the host agreement at a rate lower than this permit for the first fourteen years of operation. The maximum emissions from either scenario are similar at maximum acceptance rates.

VI. Dispersion Modeling

A. Criteria Pollutants

Modeling is not conducted for NMOC (no air quality standard) or VOC (no approved source-specific model). In accordance with current DEQ guidance, CO, NOx, and PM-

[13] The main issue with LFG generation is the consistency. Therefore, a certain amount of time is warranted to ensure the decomposition process is relatively stable at the minimum enclosed flare flow.

10 have been modeled based on the emission rate. As the emission rates and stack parameters are different based on the two-phased BACT approach, both sets of variables were modeled separately using SCREEN3. The modeling summary and outputs are provided in Attachment B. As shown in the attachment, all air quality impacts are less than the standards when adding the background concentrations for the respective pollutant.

The Phase 2 stack parameters were obtained from an enclosed flare with similar expected flow rates. Part of the GCCS approval (once required by the NSPS) will require the source either to revalidate the modeling done for this review, or to conduct new modeling to demonstrate compliance with the air quality standards. This will depend on the similarity of the modeled stack parameters to those selected for the actual enclosed flare.

Pollutant	Standard ($\mu g/m^3$)	Maximum Modeled Impact ($\mu g/m^3$)	% of Standard
CO 8-hr	10000	2507.40	25%
CO 1-hr	40000	3976.28	10%
NOx annual	100	40.31	40%
PM10 24-hr	150	55.43	37%

B. Toxic Pollutants

CL is exempt from toxics review; no modeling is required.

VII. Boilerplate Deviations

The MSWLAND boilerplate has not been updated since 1999. The boilerplate was used as a reference; however, this permit action clarifies and adds requirements applicable to CL. The permit contains no other boilerplate deviations.

VIII. Compliance Demonstration

Emissions testing per 40 CFR 60 Subpart WWW is required. The Department may require additional testing as deemed necessary.

The NSPS provides that PSD applicability calculations shall be performed per AP-42 methodology. Applicable state guidance provides for similar treatment of landfills. As such, there is a two-fold approach for calculating emissions, dependent on the purpose of the calculation. For NSPS compliance purposes, CL must use the regulatory defaults found in 40 CFR 60.754(a)(1) until Tier 2 and Tier 3 testing is completed and approved. At that time, the site-specific constants determined during the site testing shall be used. For NSR purposes and emissions inventory data, CL shall use the constants utilized in this analysis ($k=0.06$, $L_o=100$, $C_{NMOC}=595$) until site-specific values are generated through approved testing.

Numerical emissions limitations (in TPY) for NMOC and VOC are not included in this permit per the landfill guidance document (APG-553A). There are short-term BACT

limits included for the combustion device. The post-combustion emissions of other pollutants are included.

IX. Title V Review – 9 VAC 5 Chapter 80 Part II Article 1

The NSPS requires any source subject to the NSPS, regardless of emissions rate, to obtain a Title V permit. The NSPS defines when the source becomes subject to the Title V program in 40 CFR 60.752(c):

"For purposes of submitting a timely application for an operating permit under part 70 or 71, the owner or operator of a MSW landfill subject to this subpart with a design capacity greater than or equal to 2.5 million megagrams and 2.5 million cubic meters, and not otherwise subject to either part 70 or 71, becomes subject to the requirements of §§70.5(a)(1)(i) or 71.5(a)(1)(i) of this chapter, regardless of when the design capacity report is actually submitted, no later than:

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(2) Ninety days after the date of commenced construction, modification, or reconstruction for MSW landfills that commence construction, modification, or reconstruction on or after March 12, 1996.

40 CFR 70.5(a)(1)(i) states "A timely application for a source applying for a part 70 permit for the first time is one that is submitted within 12 months after the source becomes subject to the permit program or on or before such earlier date as the permitting authority may establish."

For CL, a complete application for a Title V permit is due no later than 90 days plus 12 months after beginning construction.

X. Other Considerations

A visit to the proposed site was conducted on June 6, 2008 as part of a site suitability analysis. Based on the review of that site visit, the local government approval, the review of the impacts of the source (determined in this review), and the requirements of this draft approval to construct, the site is considered suitable.

As discussed in Section III.A, the project must meet additional requirements, mainly concerned with public participation, due to the state major source status.

-The permit application fee was received on April 21, 2008.

-The Local Governing Body Certification, required under §10.1-1321.1, was signed on March 19, 2008, and received on April 14, 2008.

-Publication by the source of a notice of application was completed on August 14, 2008. The notice was published in the Cumberland Bulletin. Additionally, CL published the same notice in the Farmville Herald on August 15, 2008.

-The following public participation information was published in the Farmville Herald on December 3, 2008.

-The public comment period begins on December 3, 2008.

-The public briefing will be held at the Cumberland Middle/High School Cafetorium and is scheduled for January 6, 2009, from 6:00 p.m. to 7:00 p.m.

-The public hearing will be held at the Cumberland Middle/High School Cafetorium and is scheduled for January 6, 2009, beginning at 7:30 p.m.

-The comment period will end on January 22, 2009.

-The localities particularly affected (Cumberland County, Amelia County, Powhatan

County) were notified by letter dated December 1, 2008.
-The FLM for Shenandoah National Park (SNP) was notified of the application by email dated April 21, 2008. The public notice was sent by email dated December 1, 2008.

XI. Recommendations

Approval of the draft permit is recommended.

Attachments

Attachment A – Emissions Calculations
Attachment B – Modeling Data